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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,343	12/22/1999	Bernardo Martinez-Tovar	P-1583	6032
23413	7590	07/13/2004	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			CHAMBERS, TROY	
			ART UNIT	PAPER NUMBER
			3641	

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/470,343	MARTINEZ-TOVAR ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Troy Chambers	3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18, 20 and 22-35 is/are pending in the application.
- 4a) Of the above claim(s) 22-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 20 and 25-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 04/07/2004 have been fully considered but they are not persuasive.

1. **Rejection of Claims 1-7, 9, 11, 18, 20 and 25-34 under 35 U.S.C. 102 by MT:**

2. Applicant's claim 1 includes the "consisting essentially of" terminology when describing the limitations of the bridge structure. In the Remarks, the applicant argues that this limitation excludes those elements that "defeat the novel and basic characteristic of **the** invention. However, the applicant left out an important feature of the "consisting essentially of" definition. The phrase "consisting essentially of" is used to limit the scope of the claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristics" of the **claimed invention**. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976). The inclusion of tungsten does not defeat the novel characteristics the *claimed* invention which merely requires a series of electromechanical parts to be arranged in a particular pattern. Tungsten does not affect this arrangement because there is no requirement that the structure operate as disclosed in the specification. It is for this very reason that the "consisting essentially of" transitional phrase is rarely used in connection with mechanical inventions.

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3. Applicant's claim 18 includes the "consisting essentially of" phrase in both the preamble and the body of the claim. However, as discussed above, tungsten does not affect the claimed invention because there is no requirement for it to operate in such a way as to cause the tungsten to interfere with bridge structure as suggested by the applicant.

4. Applicant's new claim 25 includes the term "consisting of" in the body of the claim. But, the Examiner notes that the phrase is applied to the layer of titanium and not the bridge structure. Hence, only the layer is restricted and all that is required is a layer of titanium metal disposed over a layer of semiconductor material. Tovar discloses such a layer.

5. **Rejection of Claims 21-23 under 35 U.S.C. 102 by Benson:**

6. Applicant's arguments are moot in view of the cancellation of claim 21 and withdrawal of claims 22-23.

7. **Rejection of Claims 1-3, 5, 7, 11 and 18-20 Under 35 U.S.C. 102 to Weiss:**

8. The rejection of the above claims has been withdrawn pending further review.

9. **Rejection of Claims 8 and 10 under 35 U.S.C. over MT:**

10. The applicant rests patentability of claims 8 and 10 on the patentability of claim 1 and the arguments in support thereof. The Examiner has addressed claim 1 above.

11. **Rejection of Claims 4, 6, 8, 9 and 11-24 Under 35 U.S.C. 103 over MT in view of Weiss:**

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12. This rejection of MT in view of Weiss has been withdrawn.

**13. Rejection of Claims 1-7, 9, 11, 18, 20 and 25-34 on Double-Patenting**

**Grounds in view of 6133146:**

14. Applicant's arguments with respect to claims 12-17, 19 and 21-24 are moot because either the rejection has been withdrawn the claims have been cancelled or are no longer pending.

15. With respect to claims 1-7, 9, 11, 18 and 20, the applicant argues the rejection is improper because "tungsten is excluded from the bridge of independent claims 1 and 18". However, as explained above, the applicant has not removed tungsten because the "consisting essentially of" phrase was used as opposed to "consisting of" in the preamble. Because the presence of tungsten does not affect the novel characteristics of the claimed invention, the Examiner has not excluded it.

**16. Rejection of Claims 1-24 on Double-Patenting Grounds over 6133146 in view of Benson:**

This rejection has been withdrawn.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 12-17 and 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable

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one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, claim 12 requires preconditioned titanium "to be stabilized against temperature-induced variations in resistance". However, the specification fails to provide support for this limitation. For example, the specification discloses a process in which the igniter is heated to a temperature from about 37 degrees Celsius to 250 degrees Celsius. Allegedly, this heating of the igniter (for example, up to 250 degrees) would result in no increase in resistivity. This conclusion appears to be flawed as disclosed by the following example. Lets say the titanium with oxide film is heated to 250 degrees Celsius for x time period and allowed to cool. This would allow the impurities to travel down through the titanium substrate y distance. While this annealing process would affect resistivity, it would not guarantee stabilization against temperature-induced variations. Continuing with the above example, upon cooling the impurities are frozen in place at the surface of the titanium to position y because the molecules of the metal have ceased to vibrate. If the metal is then reheated to 250 degrees Celsius for a time period  $x+x'$ , the impurities at position y continue its migration in the metal thereby allowing those impurities still present at the surface to follow. Hence, the resistance has been affected even further because of the increase in impurities within the metal substrate. Therefore, the applicant has not provided a preconditioning process in which the resistance of the titanium would be stabilized.

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***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9, 11, 18, 20 and 25-34 are rejected under 35 U.S.C. 102(b) as being anticipated by PCT Publication WO 9742462 issued to Martinez-Tovar ("MT"). MT discloses a semiconductor bridge device 10, comprising: a silicon or sapphire substrate 12 (pg. 11, ll. 29-30); an electrical bridge structure disposed on the substrate 12 (fig. 1), the bridge structure comprising a layer of semiconductor material; a layer consisting essentially of titanium 18, 20 (pg. 11); the bridge structure comprising a bridge section 14c extending between pad sections 14a/b; a pair of aluminum lands 16a/b (pg. 9, ll. 13-36); a pair of electrical leads 32 a/b; and, a capacitor connected to said leads 32 a/b (pg. 24, ll. 24-29).

3. With respect to claims 5 and 29, MT discloses a substrate comprises silicon with a silicon dioxide layer (pg. 8, ll. 16-21).

4. With respect to claims 6 and 30, MT discloses a substrate comprising sapphire (pg. 8, ll. 24-27).

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5. With respect to claims 7, 9, 19, 31 and 33, MT discloses a semiconductor bridge wherein the material having a negative coefficient of electrical conductivity comprises polycrystalline silicon (claim 18).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8, 10 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over MT in view of US Patent No. 4976200 issued to Benson et al. ("Benson"). MT discloses a semiconductor bridge as described above. But, Benson does not disclose a bridge structure comprising a layer of undoped polycrystalline silicon. However, the use of undoped silicon substrates is well known and used by those with ordinary skill in the semiconductor igniter art (see, e.g. U.S. Patent Nos. 4976200, 5309841, 5861570 and SIR H1366).

Specifically, Benson discloses a tungsten bridge for the low energy ignition of explosive and energetic materials wherein the substrate 12 and silicon bridge layer 20 are made of undoped silicon. At the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the doped silicon layers of MT with undoped silicon as taught by Benson. The suggestion/motivation for doing so would have been to save manufacturing time and costs (Benson, col. 3, ll. 67-67 to col. 4, ll. 1-28).



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**Double Patenting**

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).


9. Claims 1-7, 9, 11, 18, 20 and 25-34 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 5-9, 12-20 and 36 of U.S. Patent No. 6133146 (the US equivalent to the MT disclosure). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons stated above.

**Conclusion**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Troy Chambers whose telephone number is (703) 308-5870. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone, can be reached at (703) 306-4198.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-4177. The fax phone number for the organization where this application or proceeding is assigned is (703) 306-4195.

 ACTION SPE 3641